Scope of Work
For Operable Unit/
Source Control Measures

Source Control Measures can be defined as a response action that eliminates or mitigates a release or threat of release of contamination from a known source area. Source Control Measures may be deemed appropriate to stabilize a release from a site, control a source, prevent further degradation to the environment, prevent exposure, or otherwise significantly reduce potential and actual threats to human health and the environment. Source Control Measures must be consistent with the final remediation for the site and must not negatively impact the overall site problem. Source Control Measures are very important to the overall remediation of a site.

Examples of Source Control Measures include:

- Hydraulic control of a ground water contamination plume;
- Remediating "hot spots" in soil and ground water;
- Preventing on-site exposure through remediation;
- Contaminant waste removal;
- Implementation of preventive operational measures to correct current on-site source problems.

The definition of an Interim Remedial Measure is similar to the definition for a Source Control. An Interim Remedial Measure is an interim response action that eliminates or mitigates a release or threat of release of contamination **from a site, or an exposure pathway.** Refer to the Scope of Work for an Interim Remedial Measure.

The primary objectives of a Source Control are described as follows:

1. Characterization of on-site source areas (i.e. type and nature of sources of contaminants, cause of release(s), estimated quantity of release(s), and if the release(s) is/are active or inactive).

2. Characterization of the extent of contamination from each source area (vertical and horizontal) and all potential/actual migration mechanisms and media.

3. Definition of the chemical, physical and biological properties of the contaminants of concern (including mobility, persistence, solubility and biodegradability).

4. The identification and assessment of any human and/or environmental targets (may be defined through various types of risk assessments).

5. Evaluation of the feasibility, effectiveness and cost of at least two (2) viable remedial actions and the "no action" alternative. Evaluations should include a capital cost, operational cost, maintenance cost and estimated operation life of the system. A description of how each alternative impacts the entire site must be included.

6. Determination of health and environmental effects of the proposed remedial action.

7. Implementation of the KDHE approved remedial action including a monitoring and verification plan.

A Work Plan that describes in detail the Source Control activities must be developed and submitted to KDHE for review and approval. The Work Plan must contain the following appendices: 1) quality assurance project plan; 2) field sampling plan; and 3) health and safety plan.

The Work Plan shall contain procedures to evaluate the following components for completion of a Source Control Report:

1.0 Historical Evaluation

A complete description of the operational history of the facility and each potential source area must be provided. This description should include waste types, disposal methods, spills, leaks, chemicals used and the current status of source areas (active/inactive). Data must be included in the report to support all findings. Additionally, a description of how the source control relates to the overall site must be included.

2.0 Source Area Investigation

Each source area must be completely investigated to meet the above described objectives. The report should include at a minimum a completed description of the: 1) physical characteristics of the study area (geology, soils, hydrogeology, surface water hydrology and land use); 2) field activities used to determine and describe the study area and sources; 3) field activities to determine the horizontal and vertical extent of contamination from each source area (soil, ground water, surface water, sediment, air and biota, if appropriate); and 4) analytical data collected during the field activities.

3.0 Target Evaluation and Risk Assessment

All human and environmental targets that are or potentially impacted from the site must be identified and current/future land uses in the area must be completely documented. A risk assessment or evaluation **may be** performed to evaluate potential human health and environmental risk posed by the study area in the absence of remedial action. The risk assessment or evaluation

will be reviewed by KDHE's risk assessment contractor for the following elements: 1) conceptual site model identifying each media impacted, direct and indirect exposure pathways, and receptor targets; 2) contaminant characterization; 3) exposure assessment, including an evaluation of present land use and reasonably expected future land use; 4) toxicity assessment; and 5) risk characterization for appropriate exposure scenarios.

4.0 Identification of Source Control Corrective Action Alternatives

Data gathered during components 1.0, 2.0 and 3.0 should be evaluated to develop a list of possible corrective actions including the "no action" alternative.

The evaluation must include: 1) identification of corrective action objectives; 2) treatability studies for corrective actions considered unproven; 3) a detailed individual and comparative analysis of each of the proposed corrective actions, and the "no action" alternative, to evaluate their ability to satisfy the following criteria:

- overall protection of human health and the environment;
- positive impact to remediation of the entire site (benefits);
- clean-up goals;
- long-term effectiveness and permanence;
- overall reduction of toxicity, mobility and volume of waste through treatment;
- short-term effectiveness;
- implementability;
- cost;
- community acceptance.

The evaluation of the above defined criteria shall provide the basis for supporting a specific Source Control Measures corrective action.

Source Control Measures Report

A comprehensive report shall be submitted to the Department which includes all documentation from components 1.0 through 4.0. The report must summarize the above defined objectives to demonstrate that each objective has been met.

Schedule

The Work Plan must include an implementation schedule for implementing and completing all activities defined within this SOW.

Remedial Actions

Following KDHE approval of the Source Control Measures Report and issuance of a Corrective Action Decision Document, a Work Plan for Remedial Design and Action must be submitted for KDHE review and approval. **The primary objectives of the Remedial Design and Action Plan are described as follows:**

1. Description of the actions necessary to implement the approved remedial action.

2. Provide detailed design plans and specifications for the implementation of the approved remedial action.

3. Description of the permits and easements required prior to implementation of the approved remedial action. A schedule for obtaining such permits must be included.

4. Provide a monitoring plan to monitor the effectiveness of the approved remedial action must be provided.

5. Provide a verification monitoring plan to document that clean up levels and objectives have been achieved must be provided.

The Work Plan must contain the following appendices: 1) quality assurance project plan; 2) field sampling plan; and 3) health and safety plan.

To satisfy the objectives the Work Plan should include the following components:

1.0 Background

Provide a brief, concise summary of the project and the objectives. Refer to the Source Control Measures Report where appropriate.

2.0 Remedial Approach

Provide a detailed description of the approved remedial alternative including: a description of any on or off-site treatment/disposal facilities, performance expectations, description of major components, past performance and effectiveness information, how remedial objectives will be met and implementation of the approved remedial alternative.

3.0 Remedial Design Plans and Specification

Include a set of contract plans and specifications for the approved remedial system(if engineered

systems are planned). Kansas law may require that engineering designs be sealed by a Professional Engineer registered in the State of Kansas.

4.0 Permitting

Describe all applicable permitting requirements for the approved remedial alternative. Include all local, state and federal regulatory requirements.

5.0 Operation and Maintenance

Provide a description of how a Operation and Maintenance manual will be prepared and its proposed content. **The Operation and Maintenance manual must be submitted to KDHE prior to implementation of the approved remedial alternative.**

6.0 Monitoring Plan

Description of a monitoring strategy and objectives to determine the effectiveness of the approved remedial alternative. The monitoring plan must include locations, methods, frequency, parameters, quality assurance and quality control and reporting.

7.0 Verification Plan

Description of a verification sampling strategy to verify that the approved remedial alternative has successfully achieved the clean up requirements and objectives. The verification plan must include methods, parameters, quality assurance and quality control and reporting.

Final Startup Report

A Final Startup Report may be required for KDHE approval prior to the startup of the approved remedial system. All “as-built” drawings and modifications to the Remedial Design and Action Plan must be documented.

Schedule

The Work Plan must include an implementation schedule for implementing and completing all Remedial Design and Action activities.

Final Remediation Report

A Remediation Report must be submitted to KDHE upon cleanup of the site (following verification sampling). The Final Remediation Report will document that the site has been remediated to the established clean up objectives or will provide appropriate technical and legal justification to discontinue active remediation. The Final Remediation Report should contain sufficient information for KDHE to reclassify the site (see SOW for Reclassification Plan).